

# Pending Changes to

## NPD 8610.23C, Launch Vehicle Technical Oversight Policy

As approved by the Flight Planning Board on April 19, 2018

### 1. POLICY

a. It is NASA's policy to perform Government technical oversight of launch services provided by commercial launch service providers. NASA remains accountable for the success of its missions launched with commercially provided launch services, since launch remains a high-risk element affecting mission success.

b. Commercial launch service providers own and operate launch vehicles and direct administrative and technical tasks associated with the launch services provided to NASA. Recognizing that the ownership of commercial launch service technical standards resides with each launch service provider, rather than with NASA, NASA uses a combination of specified approvals and targeted insight in order to establish, apply, and modify mission technical requirements, identify technical issues and resolve disputes, and assess the competency and adequacy of the technical work performed by the commercial launch service providers. NASA's technical oversight approach seeks to ensure the successful performance of the launch services for NASA missions.

c. Consistent with the responsibility to ensure the highest practicable probability of launch success, NASA will retain involvement in and control of the launch through a technical oversight approach, which combines focused approvals and technical insight of contractor launch activities.

d. For the purposes of this policy, Government insight means acquiring knowledge and understanding of contractors' actions by the monitoring of selected metrics and/or milestones through insight, documentation review, meeting attendance, reviews, tests, and compliance evaluations. NASA retains the ability to nonconcur with a contractor's proposed actions for a NASA launch service based upon knowledge obtained during insight activities consistent with Section 5.c.2 below.

e. For the purposes of this policy, Government approval entails providing the launch service contractor formally documented authority to proceed and/or formal acceptance of requirements, plans, tests, or success criteria in specified areas.

[f. Class D missions that launch on vehicles certified to Category 1, per NPD 8610.7, accept high risk launch vehicles and therefore may follow a modified technical oversight approach as](#)

allowed by Section 2.c. The modified approach, included as Attachment C, is an approved exception to this NPD.

## **2. APPLICABILITY**

a. This NPD is applicable to NASA Headquarters and NASA Centers, including Component Facilities and Technical and Service Support Centers. This language applies to Jet Propulsion Laboratory, a Federally Funded Research and Development Center, other contractors, grant recipients, or parties to agreements only to the extent specified or referenced in the appropriate contracts, grants, or agreements.

b. This policy applies to all NASA-owned or NASA-sponsored non-crewed payloads/missions designed for launch into Earth orbit and beyond and/or for other Government-sponsored payloads for which NASA is responsible for launch service acquisition and management.

c. NASA launches, identified through the Flight Planning Board (FPB) process as able to tolerate higher-risk launch services as defined in NPD 8610.7, may utilize a modified technical oversight approach.

d. Application of this approach to launches purchased under spacecraft contracts for on-orbit services or other innovative contractual arrangements will be reviewed by the Human Exploration and Operations Mission Directorate (HEOMD) and sponsoring Mission Directorate, on a case-by-case basis and approved through the FPB process well in advance of contract action.

e. This policy is not applicable to suborbital launches or payloads launched on the Space Launch System.

f. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms: "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

g. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

## **3. AUTHORITY**

The National Aeronautics and Space Act, as amended, 51 U.S.C §. 20113.

## **4. APPLICABLE DOCUMENTS AND FORMS**

- a. NPD 1280.1, NASA Management System Policy.
- b. NPD 8610.7, Launch Services Risk Mitigation Policy for NASA-Owned or NASA-Sponsored Payloads/Missions.
- c. NPR 7120.5, NASA Program and Project Management Processes and Requirements.
- d. NPR 8715.3, NASA Safety Manual.

## **5. RESPONSIBILITY**

- a. The HEOMD Associate Administrator (AA) shall be responsible for the NASA Launch Services Program (LSP) and provides necessary resources to support implementation of this policy.
- b. The Director for Launch Services Office (LSO), shall as delegated by the AA of HEOMD, be responsible for the following:
  - (1) Assessing LSP implementation consistent with this policy directive.
  - (2) Documenting approved exceptions, waivers, and deviations to the LSP technical oversight approach for specific missions at a FPB.
  - (3) Reviewing and coordinating any reduced technical oversight approach with the General Counsel to assess applicability of Federal Aviation Administration (FAA) launch licensing authority.
  - (4) Assessing the applicability of this technical oversight approach to on- orbit service acquisitions or other innovative contractual approaches for launch in advance of contract award in coordination with the NASA Chief Engineer, affected Mission Directorate, and the Office of Safety and Mission Assurance.
  - (5) Coordinating, through the FPB, policy guidance on balancing NASA Risk Mitigation Policy (NPD 8610.7) with Technical Oversight Policy to enable mission-unique tailoring for individual missions/classes of missions prior to contract award.
- c. The LSP Manager, reporting to the Director for LSO, shall be responsible for the following:
  - (1) Resolving technical issues that arise due to competition among mission requirements, cost and schedule, and best technical practices in the following manner:
    - (a) The LSP Manager ensures that all relevant and reasonable technical issues are properly identified, competently addressed, and coordinated with the spacecraft customer.
    - (b) If the LSP Manager is unable to satisfactorily resolve technical issues and cannot reach consensus with the spacecraft customer on a resolution path, then the LSP Manager shall elevate

those issues to the HEOMD. The HEOMD Director for LSO will coordinate with the affected spacecraft Mission Directorate, the Office of the Chief Engineer, the Office of Safety and Mission Assurance, and other Headquarters offices, to consider cost, schedule, and performance issues affected by the technical issue. The HEOMD will seek to reach consensus, but retains authority for risk acceptance of technical launch vehicle issues as they affect HEOMD's responsibility for assuring launch mission success.

(2) Assuring that all NASA launch service contracts:

(a) Include the Government's approval and insight requirements and rights as outlined in Attachment A to this policy directive.

(b) Permit independent verification/validation assessment by NASA of selected critical mission analyses, procedures, processes, tests, and acceptance criteria to obtain the maximum practicable probability of launch success.

(c) Permit approval by NASA of all mission-unique analyses, spacecraft to launch vehicle interfaces, designs, and test procedures.

(d) Permit substantial involvement in, control of, and final approval by NASA for the final "go-for-launch" decision.

(e) Identify contractor assurance activities and permit NASA assurance activities, including verification of contractor implementation of assurance activities, through a formal NASA Safety and Mission Assurance process.

(f) Protect the safety of the public, the workforce and property; comply with all applicable statutory and regulatory environmental requirements; and preserve the national security as well as foreign policy interests from risks attendant with a Government launch.

(g) Provide, in accordance with NPR 7120.5, for the safety and mission success of the launch portion of any payload mission utilizing launch services acquired and managed by LSP and governed by this policy.

(h). Identify and arrange requisite assets to assure telemetry data is provided for all launch vehicle-powered flight events for every NASA LSP launch. Real-time telemetry for all vehicle-powered flight events is desirable; however, receive and record is mandatory.

d. The AA for each Mission Directorate shall be responsible for assuring that any proposed deviations to this policy are brought to the attention of the Director for LSO and resolved through the FPB process.

## **6. DELEGATION OF AUTHORITY**

None.

## **7. MEASUREMENTS/VERIFICATION**

- a. Compliance with this NPD will be evaluated on a continuing basis by the HEOMD Director for LSO in coordination with the LSP Manager.
- b. The LSP Manager shall maintain a record of lessons learned and NASA contributions to mission success as a result of NASA technical oversight after each NASA-acquired launch.

## **8. CANCELLATION**

NPD 8610.23C, "Technical Oversight of Expendable Launch Vehicle (ELV) Launch Services," dated April 18, 2006.

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## **ATTACHMENT A: GOVERNMENT'S APPROVAL AND INSIGHT REQUIREMENTS**

A.1 NASA technical oversight of launch services provided by the private sector has two elements: Approval and Insight.

A.2 Specific areas requiring Government Approval are:

- a. Spacecraft-to-launch vehicle interface control documents/drawings.
- b. Decisions/resolutions of action items as determined by joint NASA/contractor Mission Integration Teams.
- c. Mission-unique hardware design, analysis, manufacture, and test.
- d. Mission-unique software design, analysis, and test.
- e. Baseline and changes to Contractors Risk Management, Quality Management, and Systems Effectiveness Plan/Approach, consistent with the intent of NPD 1280.1, NPR 7120.5, and NPR 8715.3.
- f. Top-level test plans, requirements, and success criteria for Integrated Vehicle Systems and for tests that verify the integrated vehicle interfaces.

- g. Launch commit criteria.
- h. Closeout of actions from NASA-Chaired Mission and Flight Readiness Reviews.
- i. Spacecraft-handling procedures and deviations.
- j. Integrated spacecraft/vehicle mate, test, and closeout procedures and deviations.
- k. Integrated spacecraft/vehicle mate, test, and closeout as-performed procedures and deviations.
- l. Launch countdown procedures and deviations that affect spacecraft/vehicle integrated assembly.
- m. Anomaly resolutions that affect the integrated assembly.
- n. Launch Go/No-Go.

A.3. Specific areas to be open to Government Insight are:

- a. Baseline vehicle design, analyses, models, and configuration management.
- b. Production program reviews, plans, and schedules.
- c. Production and systems test and Material Review Boards.
- d. Critical flight hardware pedigree.
- e. Safety and Mission Assurance compliance evaluations (prime and subcontractors).
- f. Pre-ship reviews.
- g. Design and qualification reviews.
- h. Major/critical problems.
- i. Major system and integrated systems tests.
- j. Post-test data.
- k. Anomaly resolutions.
- l. Failure analysis.
- m. Vehicle/ground support equipment procedures.
- n. Launch site support work schedules and plans.

- o. Launch site vehicle preparations and closeout data.
- p. Vehicle walk-down inspections.
- q. Operations and procedure discipline.
- r. Work practices and documentation.
- s. Conduct of contractor-chaired Mission, Launch, and Flight Readiness Reviews.
- t. Postflight vehicle, tracking, and range data.
- u. Postflight anomaly investigations/closeouts.

## **ATTACHMENT B: REFERENCES**

B.1 42 U.S.C. Section 14701 of the "Commercial Space Opportunities and Transportation, Definitions" (P.L. 105-303), as amended.

B.2 42 U.S.C. Section 14731 of the "Requirement to Procure Commercial Space Transportation Services" (P.L. 105-303), as amended.

B.3 42 U.S.C. Section 14732 of the "Acquisition of Commercial Space Transportation Services" (P.L. 105-303), as amended.

B.4 NPD 8610.12, Office of Space Operations Space Transportation Services for NASA and NASA-Sponsored Payloads.

B.5 NPD 8610.24, Launch Services Program (LSP) Pre-Launch Readiness Reviews.

B.6 NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping.

B.7 NPD 8700.3, Safety and Mission Assurance Policy for NASA Spacecraft, Instruments, and Launch Services.

B.8 NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments.

B.9 NPR 8715.5, Range Safety Program.

B.10 NASA-STD-8709.2, NASA Safety and Mission Assurance Roles and Responsibilities for Expendable Launch Vehicle Services.

B.11 Program Management Plan for the Acquisition and Management of ELV Launch Services, dated February 2, 1999.

## **ATTACHMENT C: CLASS D MISSION LAUNCH VEHICLE MODIFIED TECHNICAL OVERSIGHT**

C.1 It is NASA's policy to perform limited technical oversight of Category 1 certified launch services provided by commercial launch service providers. NASA remains accountable for the success of its missions launched with commercially provided launch services. However, NASA recognizes that taking more risk for Class D missions is permissible to utilize a larger array of emerging launch providers that will lower the cost of launch for these missions that by definition are low priority, not critical, and would not cause the failure of a NASA program's mission.

C.2 NASA shall use a limited combination of specified approvals and targeted insight in order to manage the mission integration technical requirements. NASA's technical oversight approach seeks to enable the use of commercially accepted mission management practices while still understanding the schedule and most significant technical risks of the launch services used for NASA missions.

C.3 Consistent with accepting probability of launch success for non-U.S. Government missions, NASA will not retain control of the launch through its modified technical oversight approach.

C.4 NASA does not retain the ability to non-concur with a contractor's proposed actions for a NASA launch service based upon knowledge obtained during insight activities consistent with Section C.6 below.

C.5 The LSP Manager, reporting to the Director for LSO, shall be responsible for the following:

C.5.1 Resolving technical issues that arise due to competition among mission requirements, cost, and schedule in the following manner:

C.5.1.1 The LSP Manager ensures that all issues from the modified approach are properly identified, competently addressed, and coordinated with the spacecraft customer.

C.5.1.2 If the LSP Manager or the spacecraft Project Manager deems that a launch vehicle issue poses an unreasonably high risk of NASA launch failure, then the LSP Manager shall inform the responsible spacecraft Program Manager seeking to reach consensus. The LSP Manager retains authority for risk acceptance, using the modified technical oversight approach, and communicating the high risk nature of Class D launch services with the responsible spacecraft Program Manager.

C.5.2 Assuring that all NASA launch service contracts for Class D missions on Category 1 Certified launch vehicles:

C.5.2.1 Include the Government's approval and insight requirements and rights as outlined in Attachment C, section C.6 to this policy directive.

C.5.2.2 Permit approval by NASA of spacecraft-to-launch vehicle interface control documents/drawings, and requirement waivers.

C.5.2.3 Include a Go/No-Go decision on launch day for spacecraft readiness based on launch commit criteria.

C.5.2.4 Require an FAA launch license to protect the safety of the public, the workforce, and property.

C.5.2.5 Provide, in accordance with NPR 7120.5, for the safety and mission success of the launch portion of any payload mission utilizing launch services acquired and managed by LSP and governed by this policy.

C.6 NASA technical oversight of launch services provided by the private sector has two elements: Approval and Insight.

C.6.1 Specific areas requiring Government Approval are:

C.6.1.1 Spacecraft-to-launch vehicle interface control documents/drawings and requirement waivers.

C.6.1.2 Decisions/resolutions of action items as determined by joint NASA/contractor Mission Integration Teams.

C.6.1.3 Spacecraft launch commit criteria.

C.6.1.4 Spacecraft handling procedures and deviations.

C.6.1.5 Integrated spacecraft/vehicle mate, test, and closeout procedures and planned or real-time deviations, impacting the spacecraft (e.g., handling, spacecraft power-on, or mission-unique requirements).

C.6.1.6 Launch countdown procedures and planned or real-time deviations that affect spacecraft interface in the ICD.

C.6.1.7 Anomaly resolutions that affect the spacecraft interface in the ICD.

C.6.1.8 Spacecraft Launch Readiness Go/No-Go.

C.6.2 Specific areas to be open to Government Insight are:

C.6.2.1 Baseline vehicle configuration to confirm the common launch vehicle configuration as defined in NPD 8610.7.

C.6.2.2 NASA mission production program reviews, plans, and schedules.

C.6.2.3 NASA mission pre-ship reviews.

[C.6.2.4 Major/critical problems affecting the NASA mission's production or launch schedule and their resolutions.](#)

[C.6.2.5 NASA mission launch site support work schedules and plans.](#)

[C.6.2.6 Conduct of contractor-chaired NASA Mission, Launch, and Flight Readiness Reviews.](#)

[C.6.2.7 Postflight anomaly, as defined by the launch provider, investigations/closeouts.](#)

[C.6.2.8 Mission-unique hardware design, analysis, manufacture, and test.](#)

[C.6.2.9 Mission-unique software design, analysis, and test.](#)

[C.6.2.10 Contractor's spacecraft-to-launch vehicle ICD verification matrix development and closeout.](#)

[C.6.2.11 Baseline and changes to contractor's risk management, safety and health, and quality management plan/approach.](#)

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None.